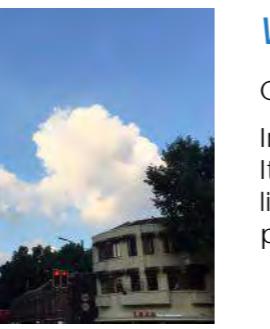


The Clouds

An interactive installation designed to spread the knowledge of clouds and inspire people's interest leading to further exploration.

Clouds follow the fickle laws of the atmosphere, reflecting the vagaries of life. Paying attention to them can add a touch of colour to our lives.

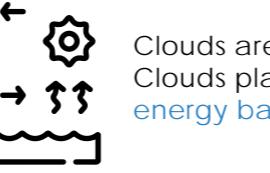
Interactive design



What is the Cloud?

Cloud is a natural feature in the sky. In meteorology, a cloud is an **aerosol**. It consists of a visible mass of minute liquid droplets, frozen crystals, or other particles suspended in the atmosphere.

The Importance of Cloud



Clouds are an important part of the **water cycle**. Clouds play a key role in **regulating the Earth's energy balance, climate**.



The appearance of clouds and their changes often **reflect changes in weather, climate, and the atmosphere** of the natural environment.

Understanding clouds is essential for predicting weather conditions, modeling the effects of future climate change, and forecasting available water resources.

Background

The cloud that you can see every day when you look up can have an impact on our lives.

Exploration of the cloud

When people didn't know much about clouds, they gave them beautiful meanings that have been kept alive.



Propitious Cloud

In China, clouds mean luck and happiness.

For thousands of years, the working people of China have summed up a wealth of **experience in distinguishing the weather through clouds** based on their shape, direction, speed, thickness, colour and other changes.



Cotton clouds, rain comes

Cotton clouds(flocculent high cumulus clouds)
The presence of these clouds indicates that the middle atmosphere is very unstable and if there is sufficient water vapour in the air and upward movement, cumulonimbus clouds will form and thunderstorms will fall.



Carp patches in the sky, no need to turn over the grain tomorrow

Carp patches(light-transmitting high cumulus clouds)
They often under the control of a cold-to-warm variable high-pressure air mass, which, if they do not continue to thicken, will remain sunny in the short term.



Hooked clouds in the sky, drizzling rain on the ground

Hooked clouds(fishing cirrus clouds)
they often followed by fronts (especially warm fronts), low pressure or troughs of low pressure, signalling the approach of cloudy rain.

Meteorological science

Why the popularisation of clouds is important?

Meteorological science is the bridge between meteorological knowledge and action to address climate change, disaster prevention and mitigation.



Making people know clouds can

1 Raising awareness and support for meteorology among the general public

2 Improving meteorological disaster preparedness and reducing disaster losses

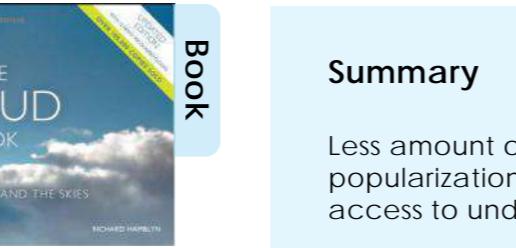
3 Safeguarding people's lives and property and promoting economic and social development

Current status of the popularisation

Video



Book



Activity



Although the popularisation of clouds is very important, the existing content is limited, and there is a lot of scope for development in this area.

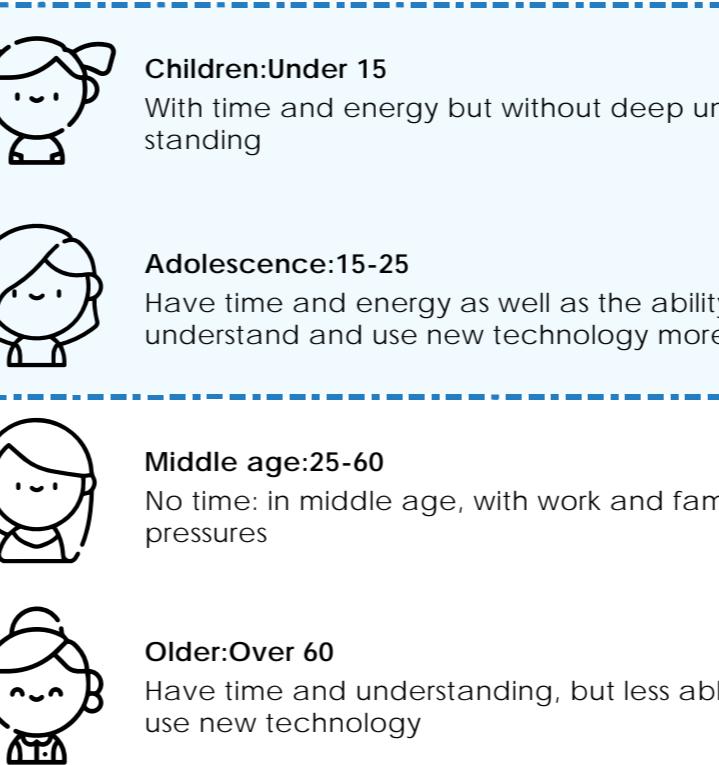
User analysis

In the face of global warming, it is imperative to **enhance citizens' awareness** of disaster prevention and mitigation and their ability to save themselves and others.



Which age group is the most suitable?

Young people are **the most suitable target group** for the popularisation of meteorological science.



Do young people need to be popularised?

Young people are a key group for the popularisation of meteorological science.



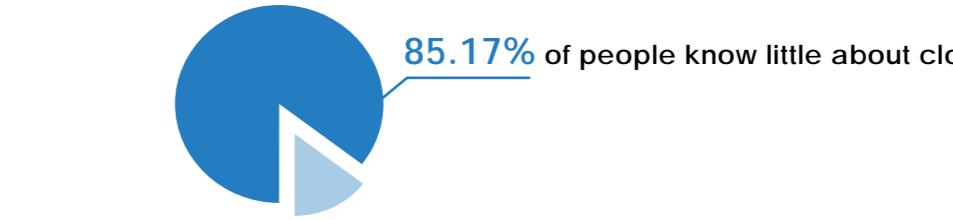
Meteorology is not taught as a separate subject in Chinese basic education, leaving a **lack of meteorology teaching materials**.

Do young people want to be popularised?

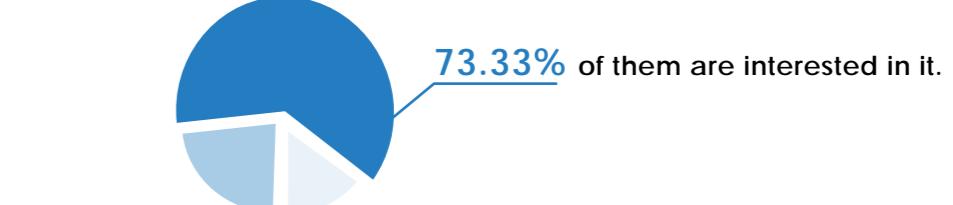
There is a **growing demand** for knowledge of meteorological principles among young people.

A questionnaire survey on attitudes towards the popularisation of clouds, focusing on young people.

Do you know enough knowledge about clouds?



Would you be interested if there was the popularisation of clouds?



User research

The young people is at a **developmental phase**.The following are their physical and mental characteristics.



Have a **strong curiosity** and **desire to explore**



Have a high level of **acceptance of new things and technologies**



Have an increased sense of **independence** and are more able to **think and judge freely**

I surveyed young people and had in-depth interviews with three of them to find out what people think about the cloud and what they want to know.

User questionnaire

Have you ever made a photograph of a cloud in the sky?

Yes,photographed clouds specifically 57%

Yes,photographed sky 31%

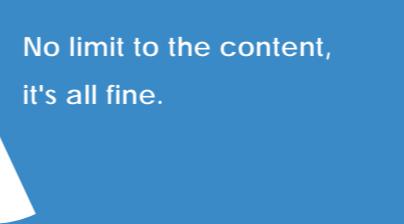
No 12%

Why photograph it?

1 Thought the clouds were **pretty** at the time and wanted to **record** them.

2 Thought the **shape** of the clouds was **peculiar** at the time and wanted to **record** them.

What do you want to learn about clouds?



User interview



Yang
22 years old
Flight Cadet



Sunny
19 years old
University student



Chen
20 years old
Office worker

“ We have **lessons about clouds**. Because **clouds can have an effect on a plane flight**.Clouds are not as soft as they look and some have **lightning** in them. ”

“ I think the clouds are **beautiful**,it is **enjoyable** to look at them. **Very little** is known about them because the introduction to clouds is **rare**, and the clouds are **so far away**. ”

Summary

1 The public enjoys watching clouds and thinks they are **pretty** and have **funny shapes**.They are **interested in clouds**.

2 The general public has **little** knowledge of clouds and **don't know what to know**.

3 The popularisation of clouds is **rare** and **can't inspire the interest** of the public.

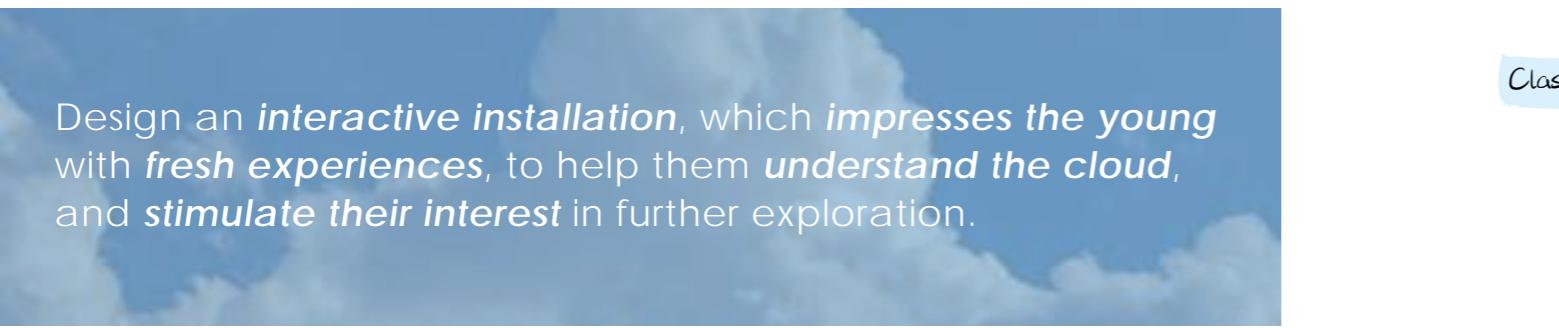
Insight

Popularisation needs to **stimulate interest** and make people **interested in learning**.

Popularisation needs to give people ways to **get started learning**.

Popularisation needs to make people **aware of the importance** of clouds.

Design definition



Design an **interactive installation**, which **impresses the young** with **fresh experiences**, to help them **understand the cloud**, and **stimulate their interest** in further exploration.

Design key points



Spread knowledge



Extremely interesting

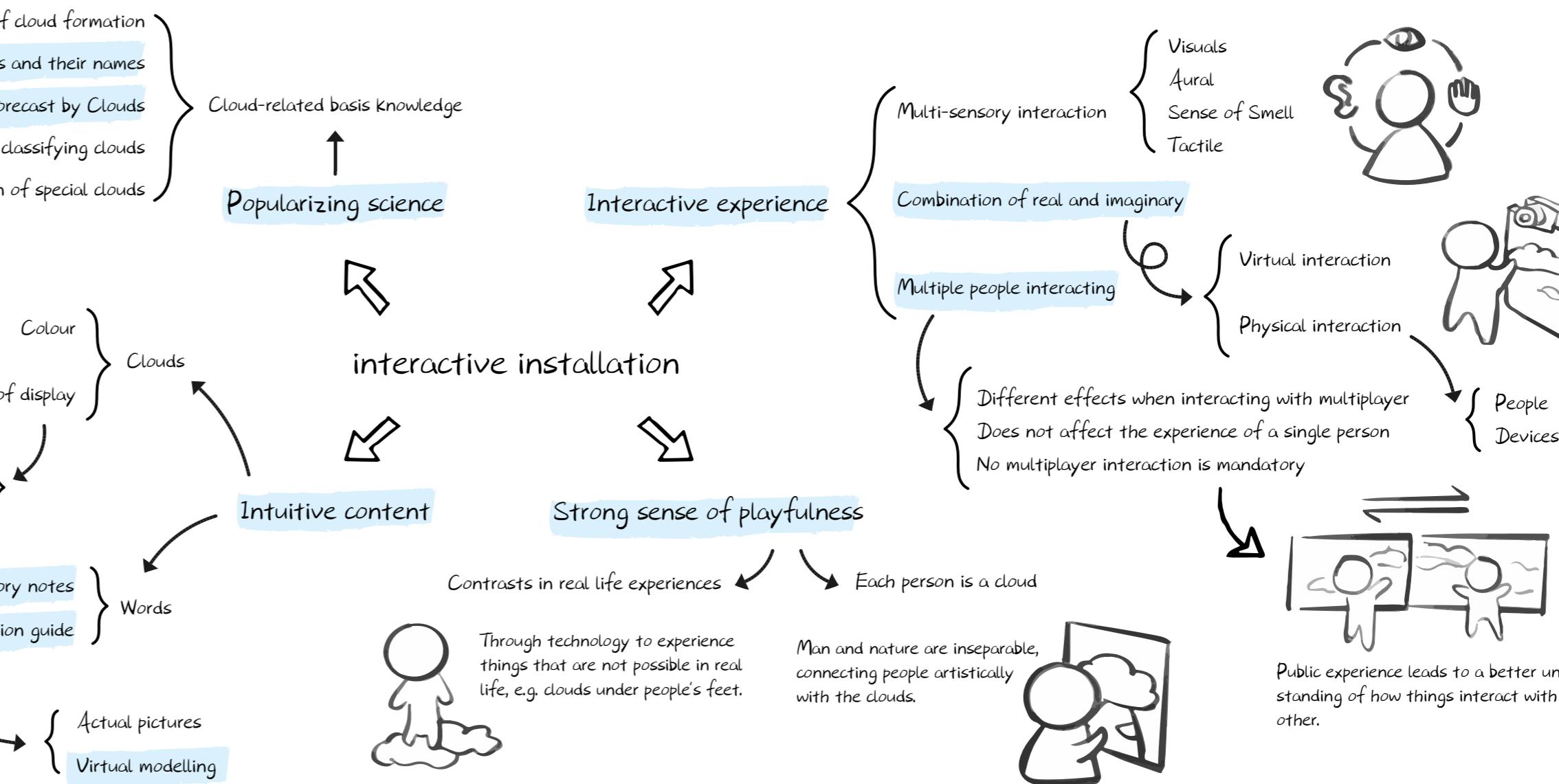


Great interactive experience



Content is readable

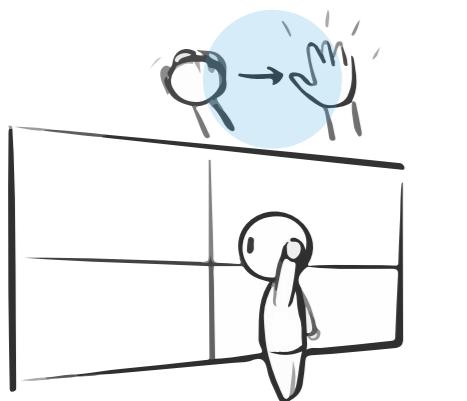
Ideation



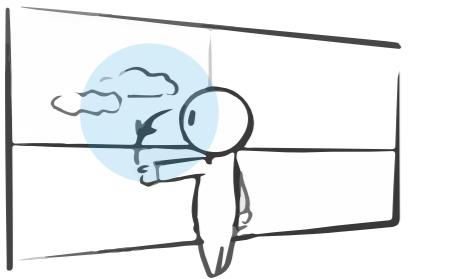
Interactive design

Scenario

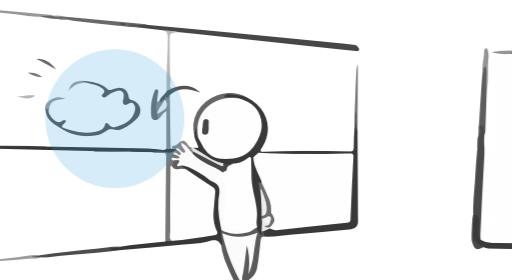
This is a playful interactive experience where the young can learn about the clouds classification and how different clouds corresponding to different weather.



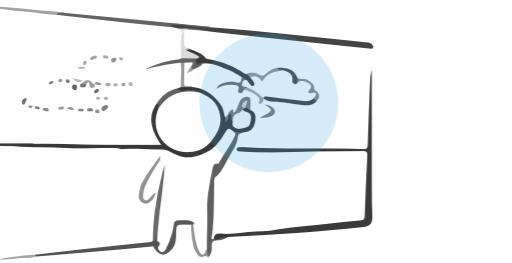
Display dynamic looping scenes to engage the user, when they wave their hand to start the interaction.



The clouds on the screen will show the different types of clouds in the scenario they are in to make the user aware.



Guiding users to create clouds and interact with them to spread knowledge.



Users can drag clouds to different scenarios to see how they look when predicting different weather.

Scenes

Use a digital display area to show cloud patterns and changes.

How to create scenes ?

Use of projection

- ✓ With *good viewing views*
- ✗ *Shadow* effect on user experience

Use of large displays

- ✓ *Excellent display*
- ✗ Display limited to *screen size*

What scenes to create ?

Visualizing knowledge of clouds using digital display area.

- 1 Showing the different *types and names of clouds*.
- 2 Clouds are transformed within *different weather scenarios* into the appropriate forecast categories.
- 3 Can *create a cloud and interact* with it.

Trigger

User interaction with interactive installations through their movements.

How to recognise the user's movements ?

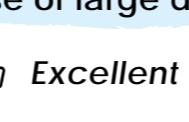
Using body controllers to capture human movement in real time.



Kinect

- body movements (simple gestures)
- multiple people
- delicate gestures

Leap motion



what user movements to recognise ?

Wave

People wave their hands when they want to **get attention**, they also wave when they are **testing a sensory device**, which is generally a subconscious action.

Grab

Grab is a gesture that people use to **hold things** and is also often used as a **pick-up action** for **virtual objects** and can catch clouds is **playful** for the user.

To start the interaction

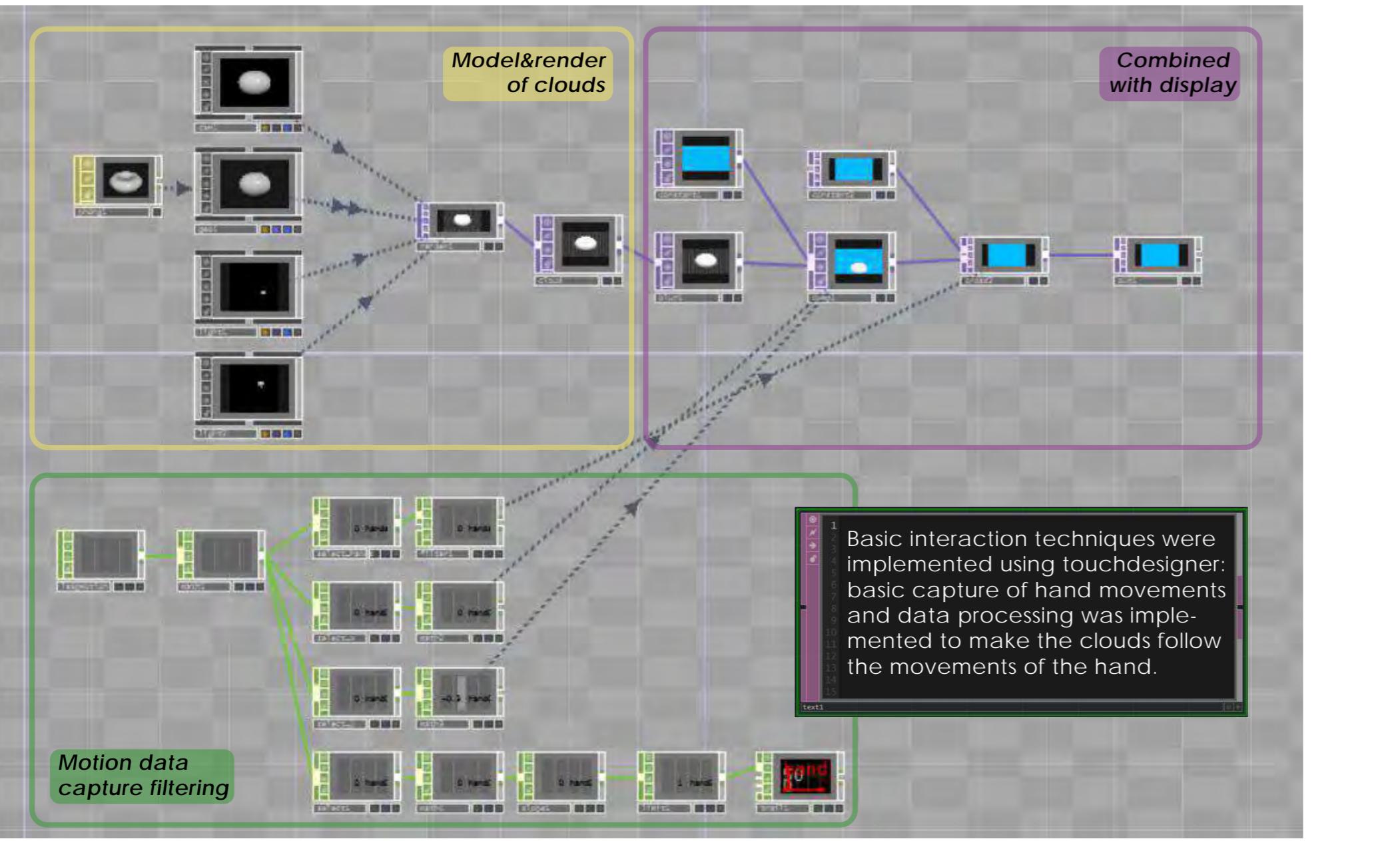
People **grip things** with both hands when they tear them, and **simulating physical gestures** makes for a **smoother user experience**.

To moving clouds

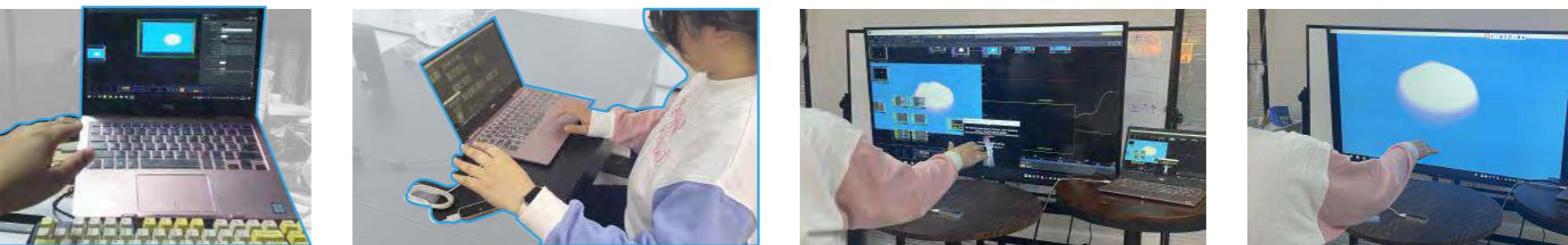
To separate clouds



Prototype



Code Test



User Test



Feedback

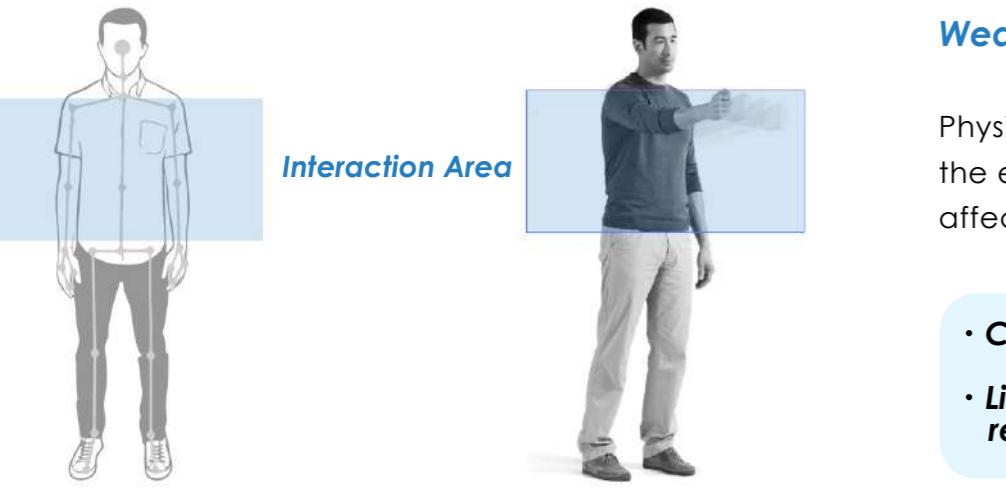
- 1 The user has an **expectation** of interaction and the movement needs to have **feedback** back to the user.
- 2 The users do not know if their movements are well captured, visualising their movements e.g. adding a **hand model** in screen can solve this but it will **reduce the immersion** of the experience.
- 3 Due to the **device limitations** of the motion capture device: leap motion, the capture well with **hand palm is facing down/up**, limiting hand interaction.

Iteration

- **Attention to feedback design**
- **Provide gesture guidance**
- **Amplify the user's feedback visually**
- **Consider device capture for actions**
- **Balance the user immersion and feeling**

Iteration

Ergonomics



Interface Design



Weaknesses of physical experience - tiredness

Physical interactions are highly susceptible to making the experiencer feel tired during the interaction, thus affecting the actual experience of the interaction.

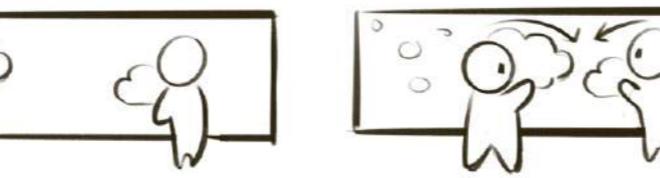
- Controls the length of the interaction (>4 minutes)
- Limit main interactions to areas where tiredness is relatively slow to occur for the experiencer.

Interaction

The cloud on the screen will follow the movement of the hand. When the hand is at different heights, different levels of cloud types are displayed.



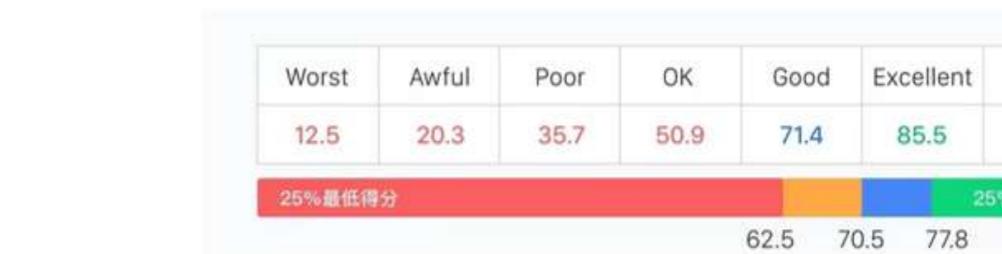
multiplayer interaction



The device supports multiple people interacting with the experience at the same time and generates special interaction feedback when multiple people interact to stimulate human interaction for a fresher experience.

Usability Test

The usability test rating score for the device was 72.6 (Good).



Evaluation of the interactive device by some users:

More innovative, intuitive knowledge of different levels and forms of clouds
The interaction is simple and easy to understand

Very fun

Very quick to get started

Very simple and direct, with good presentation effects

The interaction of specific actions to show specific contents is full of freshness.

Summary and Reflection

For science popularisation devices that can be interactive, the way of interaction should be **linked to the content**, integrating science popularisation into the design of the programme, rather than just presenting the science content as information.

The purpose of popularisation of science should not be limited to popularising scientific knowledge, but also allow the experiencer to **enjoy the charm and fun**.



Drift

An interactive mirror designed to break the negative emotion pattern and evoke self-reflection for people have appearance anxiety.

Many of my friends are troubled with appearance anxiety and I wanted to help turn negative emotion into reflection through design hence build up confidence gradually .

Emotion Design

Product Interaction

Background

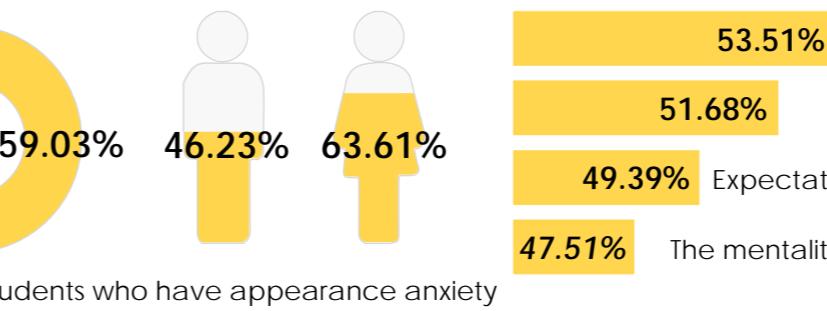
Appearance anxiety discussion is a popular topic on social media. There are dozens of popular topics about appearance anxiety, and the total number of related topics read exceeds one billion.



- #What appearance anxiety affects you# 270 million+ reads
- #Reject Appearance Anxiety# 3.148 million+ reads

social research

CYS Media conducted a questionnaire survey on the topic of appearance anxiety for **2,063 college students nationwide** and found the **main causes** of appearance anxiety.



result

1 Many people suffer from varying degrees of appearance anxiety.

2 There is a degree of age stratification. It is often young people in their twenties who suffer from appearance anxiety.

3 Women have more severe appearance anxiety than men.

influences

Many people who suffer from severe appearance anxiety end up taking a 'shortcut' to the mainstream aesthetic at the expense of their health. For example

Cosmetic surgery
There is a slight risk of surgery, which can be mental damaging if it does not meet psychological expectations

Dieting or induced vomiting
Damage to the stomach and oesophagus and, in severe cases, anorexia nervosa

User research

I chose to interview mainly female friends around me and asked them about their views on appearance anxiety

research interview

Mainstream aesthetics are defined by capital. People **don't know enough** about how good they look.

I don't go out until I have **put on my make-up for 15 minutes or more**. More anxious about going out **with good-looking friends**.

Most of those who develop appearance anxiety are **better looking girls**.

They are **overly concerned with the details** of their appearance.

findings

Most people's severe appearance anxiety is unnecessary and **people need to be aware of their own beauty**, recognise that **beauty is diverse and create a healthier social environment**.

Desktop research

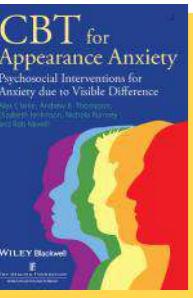
factors

External factors

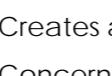
- Excessive pursuit of mainstream aesthetics
- Appearance is easily translated into economic benefits
- Incorrect promotion by the social environment

Relevant book

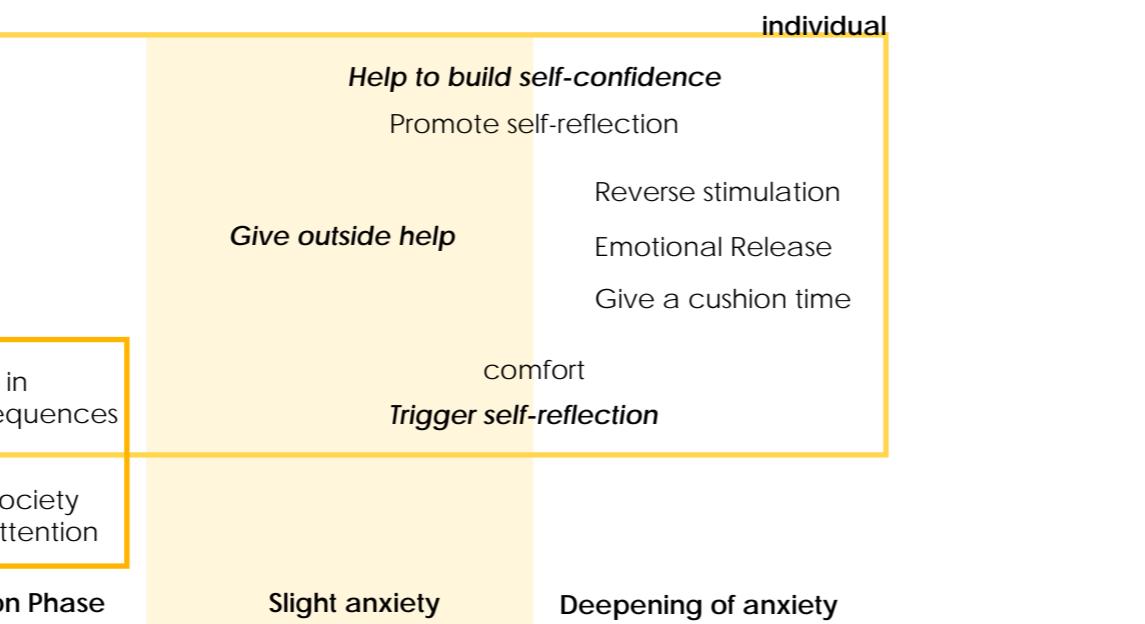
This book explores a **visible disfigurement can have a profound psychological impact on those affected**, and classifies people with appearance anxiety into **a second group for whom their concern is related to self-perception, or a perceived problem or deficit in their appearance**.



- 1 Comprises a 'social disability': impacting on the thoughts, feelings and behaviours , affects the reactions of **others**.
- 2 The **media** can play a role in creating and exacerbating the pressures on those distressed by their appearance.
- 3 The '**normative**' concern with appearance that is evident in the general population.
- 4 Appearance is valued differently in different **cultures** there may be a particular premium placed on appearance for **Women**.



Design direction



Theoretical support

Social psychology

Self-awareness

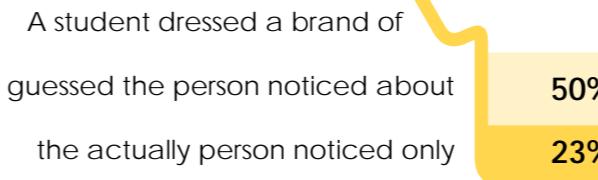
Self-awareness refers to the state of mind when an individual treats himself or herself as an object of attention.

According to self-awareness theory, when we focus on ourselves, we evaluate and compare our present behaviour with our internal standards and values (Carver, 2003; Duval & Silvia, 2002, 1972).

- **Private self-awareness**, in which individuals place more importance on their internal characteristics and feelings,
- **Public self-awareness**, in which individuals are more concerned with their external aspects.

Ego bias-The spotlight effect

The spotlight effect refers to people's tendency to **overestimate their own prominence in self-observation**, to see themselves as the centre of a situation, and to **overestimate the attention they receive from others**.

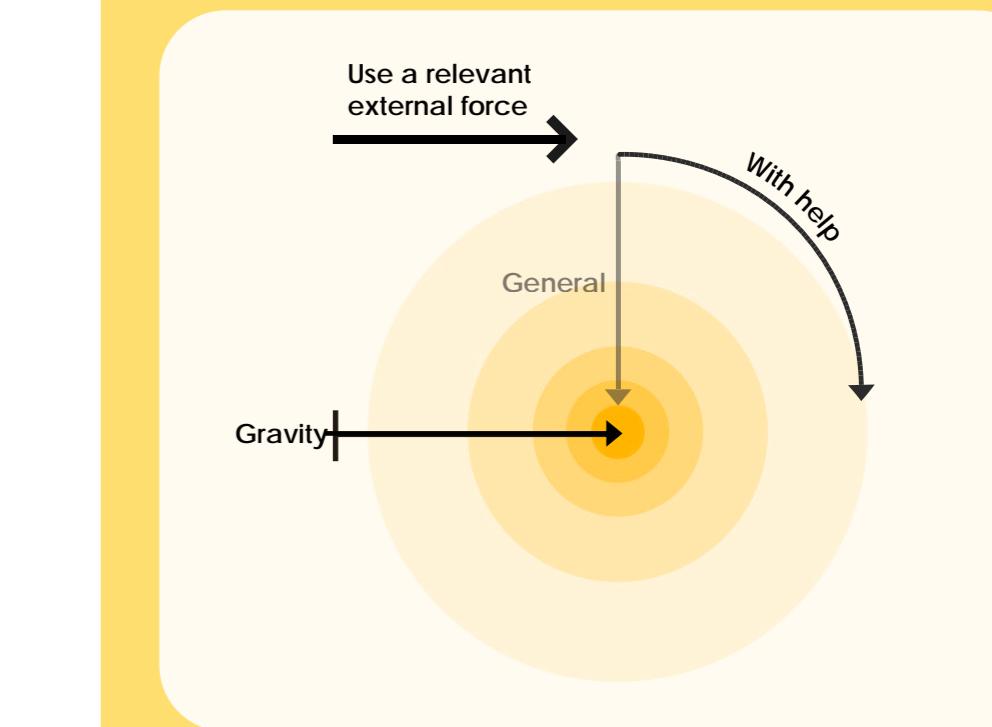


· Gilovich et al. (2000)

Design definition

Interventional therapy

It's easy to create a vicious cycle when we're deeply involved in appearance anxiety. The circulation will accelerate the severity, similar to gravity. So could we use a relevant force to prevent this? (similar to interventional therapy)



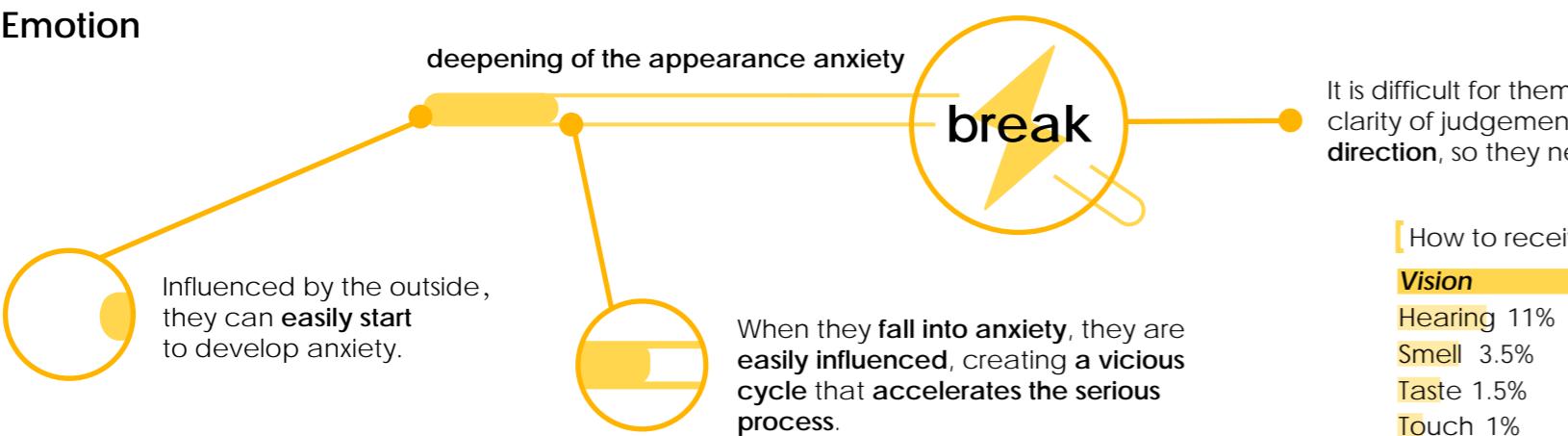
How might we

prevent the deterioration of young girls' appearance anxiety by intervening with relevant influences as an external force?



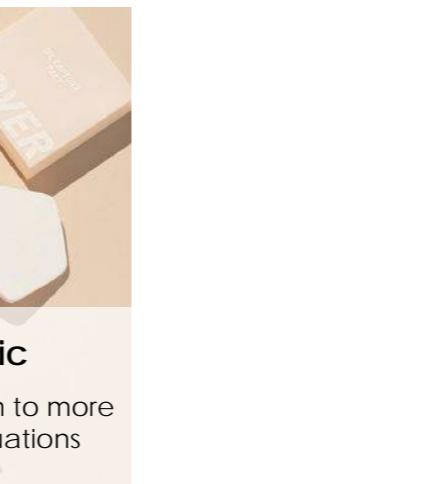
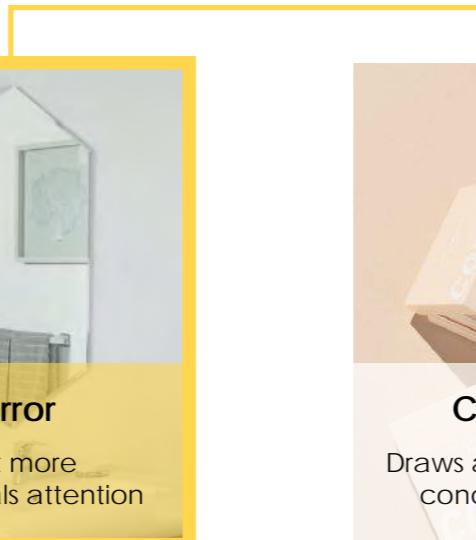
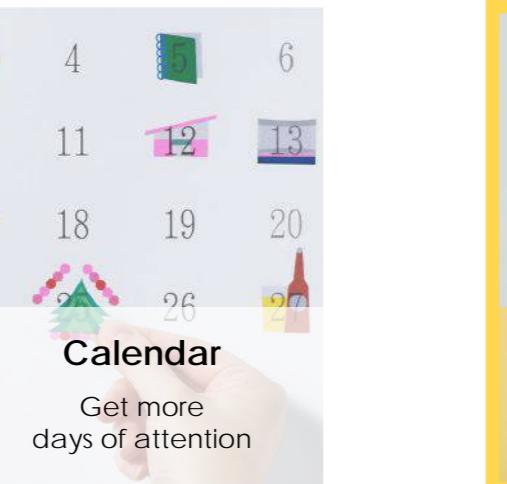
Design thinking

Emotion



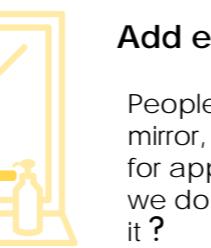
Care about other's comments
Question their previous standards
Begin to feel less confident
Pay more attention to their looks

Medium analysis



Concept testing

Test method



Add emotional trigger to the mirror

People **groom** themselves in front of the mirror, which is also **the most likely place** for appearance anxiety to occur, so can we do something on the mirror to avoid it?

- Randomly choose some students in university
- Decorated with some words of encouragement
- On the mirrors they use every day
- After two weeks, get the feedback

Feedback

FEELS

get positive mental cues
No feeling because it doesn't touch
Feel the novelty

START



END



DOES

Get used to its presence
have a self-motivating effect

feel fun to look mirror
take it off when it obstructs looking
clean mirror when add the tip

Choose to keep it
unconsciously ignore

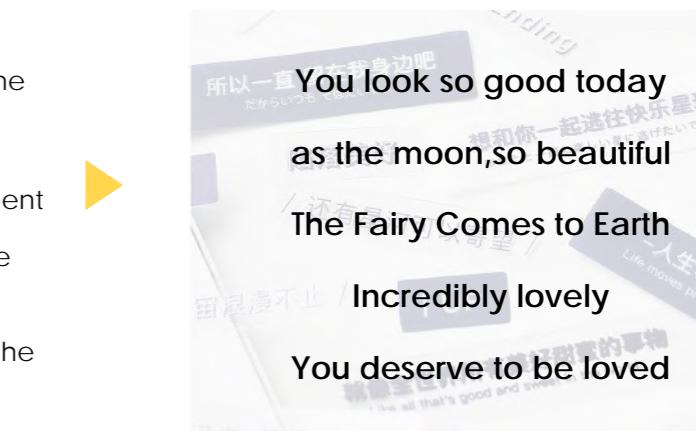
Insight

Must not interfere with the use of the mirror: People will delete a trigger or unconsciously decline its use.

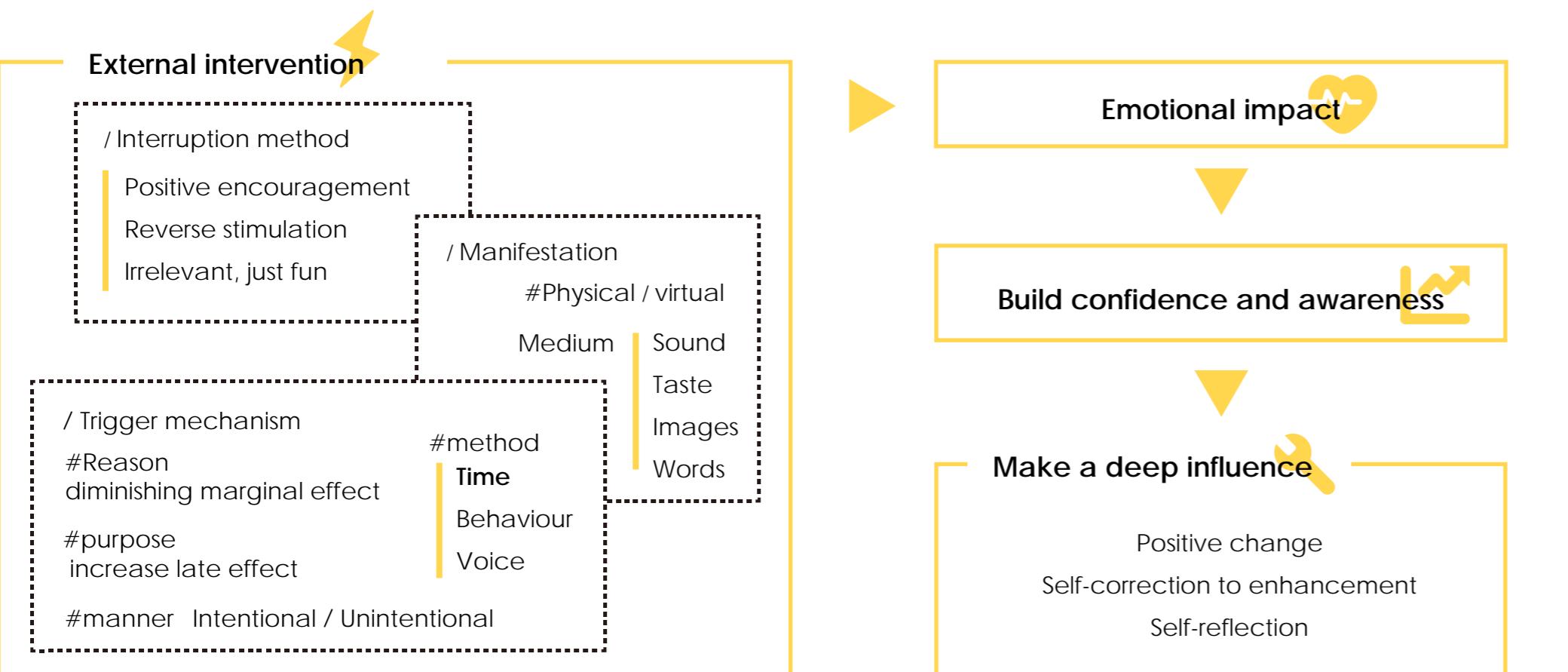
Effect varies from person to person: Everyone feels the same thing differently and so produces different effects.

Can't always stay on show status: The always-on trigger cause people to get used to it so that the effect can be diminished.

Small changes to it can have an effect if person looking at it: We think that insignificant details don't make a big difference, but *The Butterfly Effect* can.



Design concept



Ideation

How can we output?



Change on the face

- Makes light create stickers on the face
- 👍 Good reception of information
- 👎 Bad experience, not easy to achieve

Change behind the mirror

- Makes the back of the mirror change colour
- 👍 Easy to implement
- 👎 Not easy to detect

Fall in front of the mirror

- Make particles fall off the mirror
- 👍 Noticeable effect
- 👎 Not easy to convey a message

Concept

The sand clock used to be a device for **measuring time**, but now it is usually used as a **decoration**. A sand clock is often a **representation of time**, with the falling sand representing the passage of time.



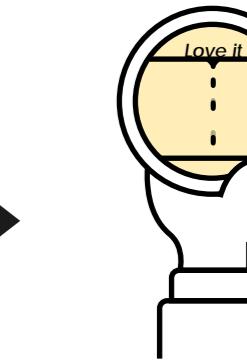
Sand-clock



Mirror

Aa

Encouragement words



If we combine them, can the user feel the ineffective time spent on appearance anxiety and get some power from the words?

Prototype

structure

The prototype was built with

acrylic glass glitter

arduino devices

 Temperature sensor - DHT11
Sensing temperature changes



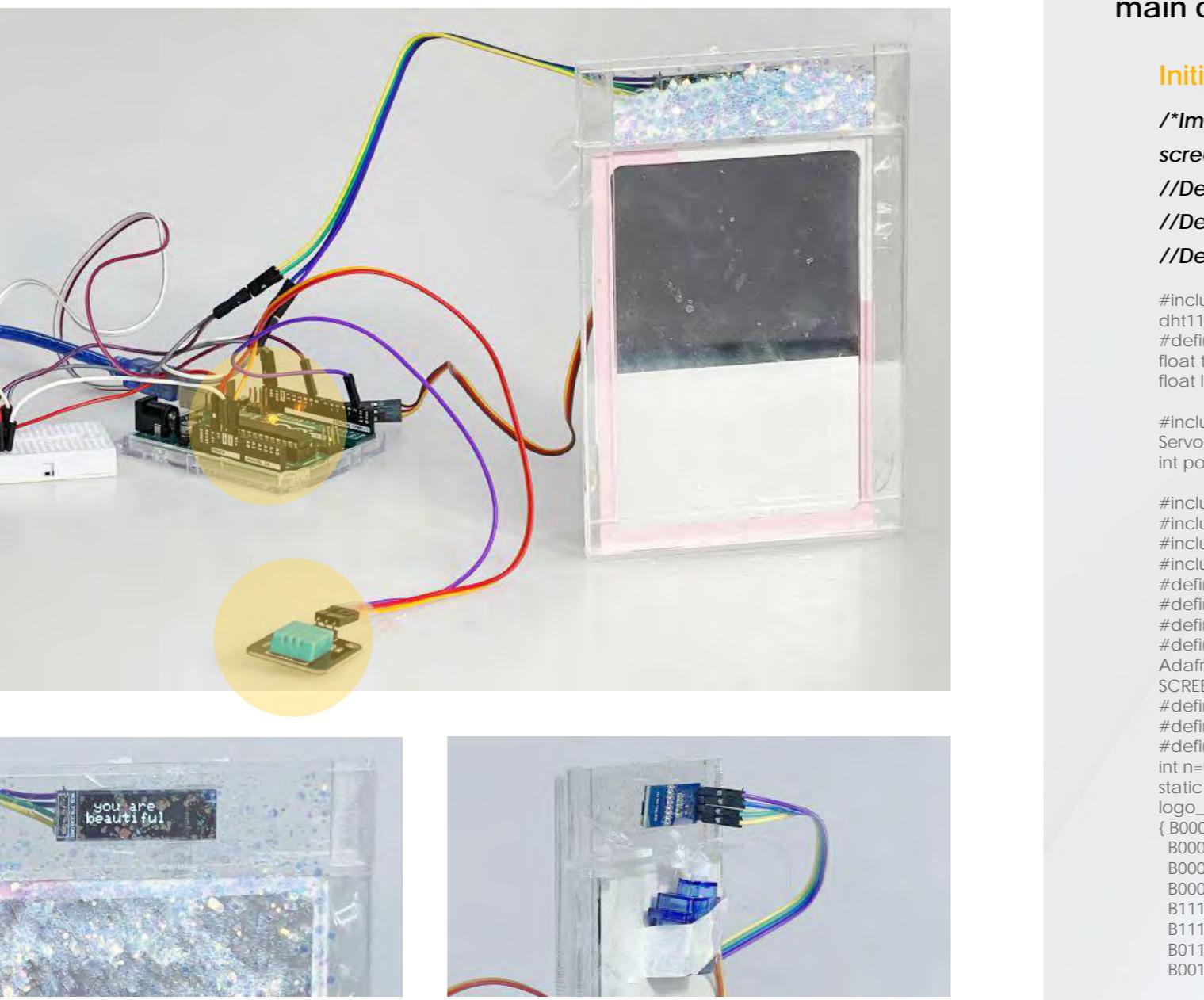
 Motherboard - Arduino UNO
Development programs, control devices



 Servo - SG90
Turning the servo



 Screen - OLED screen 128*32
The screen shows the content



main code

Initialisation

```
/*Import of sensor, servo and  
screen libraries*/  
//Define the relevant pins  
//Define variables  
//Define snowflake pattern data
```

```
#define XPOS 0 // Indexes into the 'icons'  
array in function below  
#define YPOS 1  
#define DELTAY 2
```

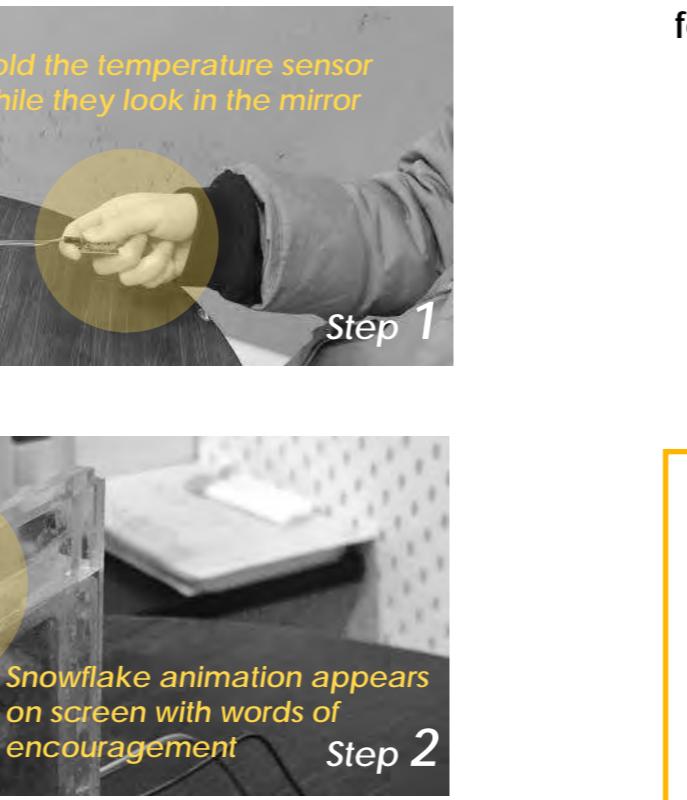
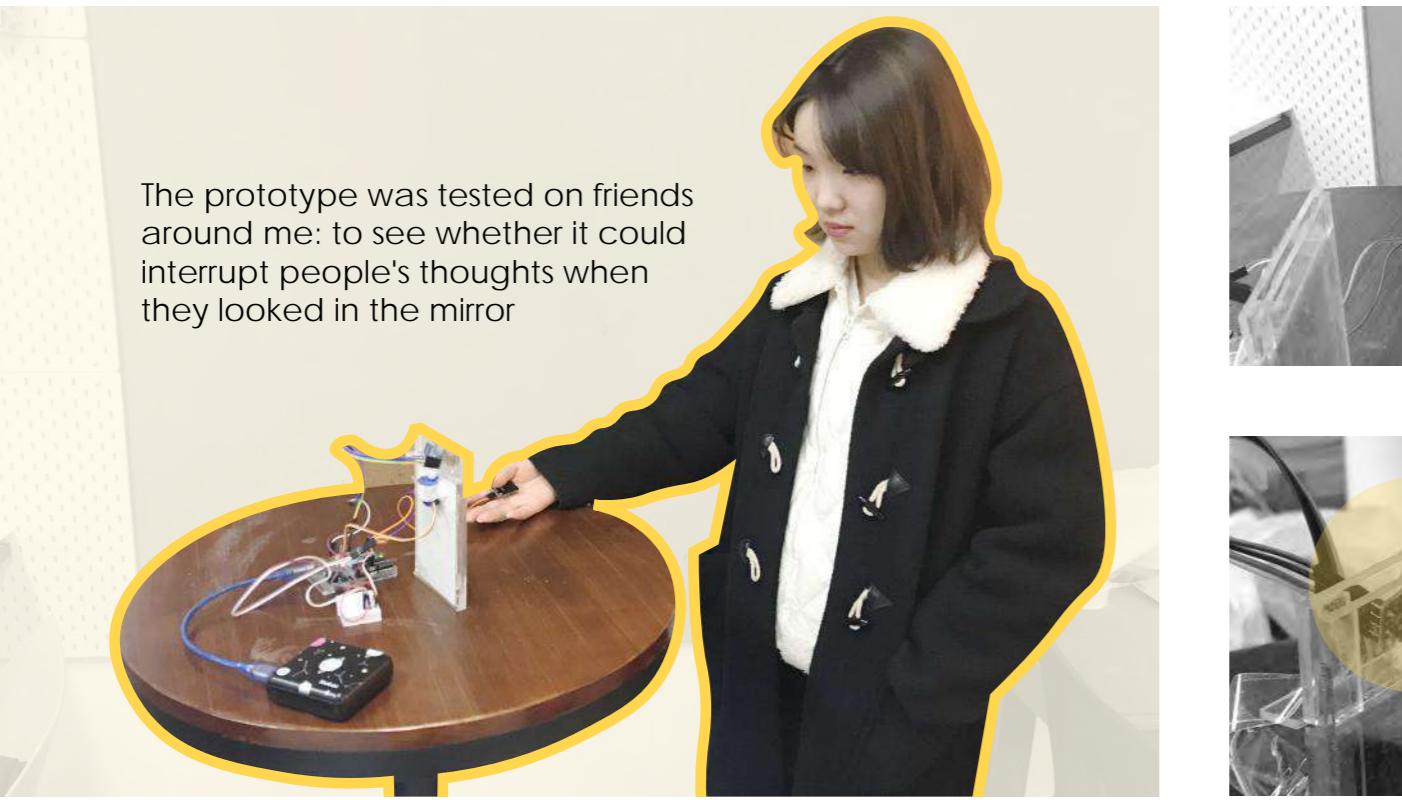
Set up

//Sensor, servo, screen set up

```
void setup()  
{  
    myservo.attach(9);  
    Serial.begin(9600);  
    Serial.println("DHT11 TEST PROGRAM ");  
    Serial.print("LIBRARY VERSION: ");  
    Serial.println(DHT11LIB_VERSION);  
    Serial.println();  
    if(!display.begin(SSD1306_SWITCHCAPVCC,  
SCREEN_ADDRESS)) {  
        Serial.println(F("SSD1306 allocation failed"));  
        for(;;); // Don't proceed, loop forever  
    }  
    int n=0;
```

```
static const unsigned char PROGMEM  
logo_bmp[] =  
{ B00000000, B11000000,  
B00000001, B11000000,  
B00000001, B11000000,  
B00000011, B11100000,  
B1110011, B11100000,  
B1111110, B11111000,  
B0111110, B11111111,  
B00110011, B10011111,
```

Test iteration



feedback

What they said about it

- " The words that appear will **move me** and will make me feel that someone is concerned about my anxiety.
- " The motion works well to **catch my attention** and make me notice the words.

- ### Can be better
- " Glitter should be changed to a material that is **less prone to static electricity**.
 - " The temperature of the hand **varies from person to person**.
 - " I feel the mirror would be better in a **portable size**.

Trigger temperature



28 °C

Time delay



3000 ms

Motion duration



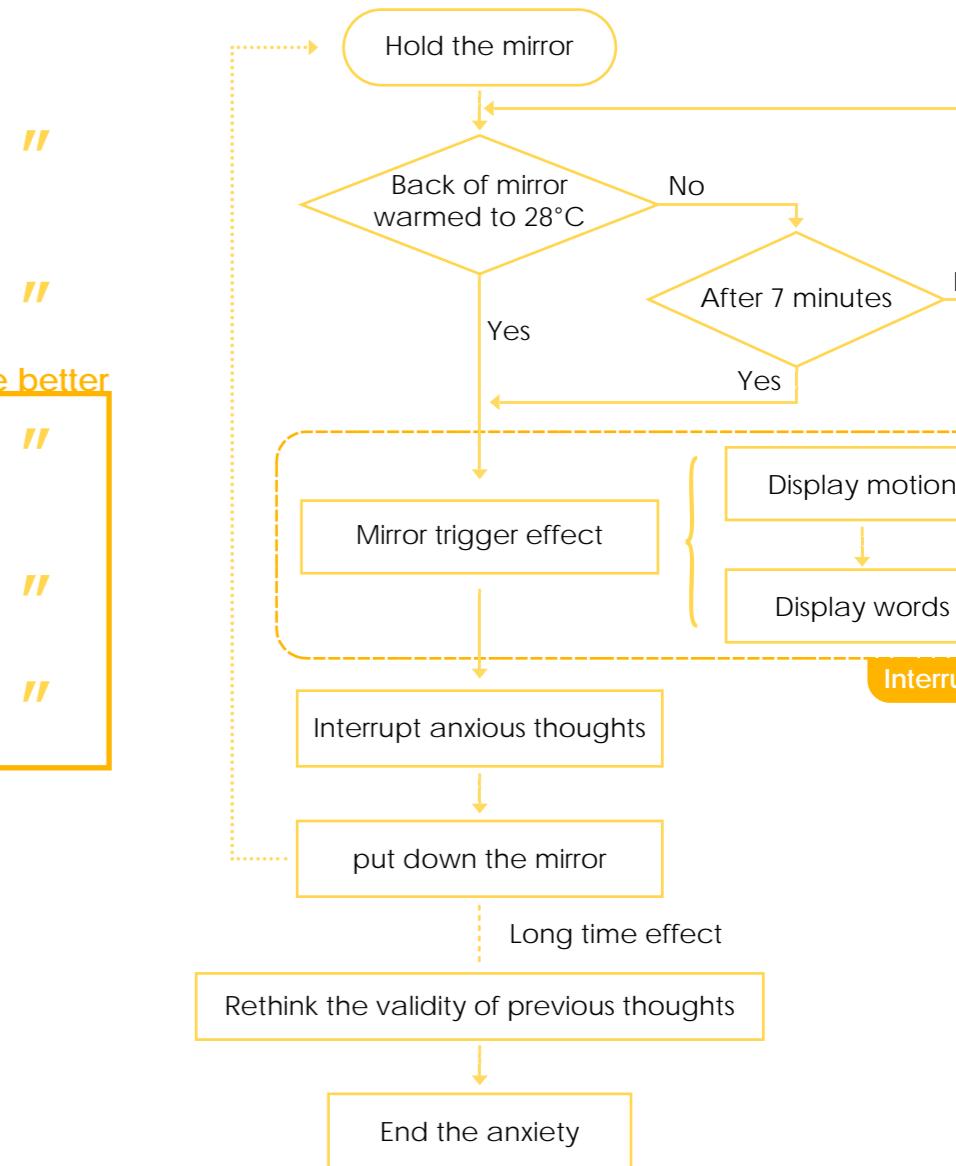
5000 ms

Font size



2

final flow



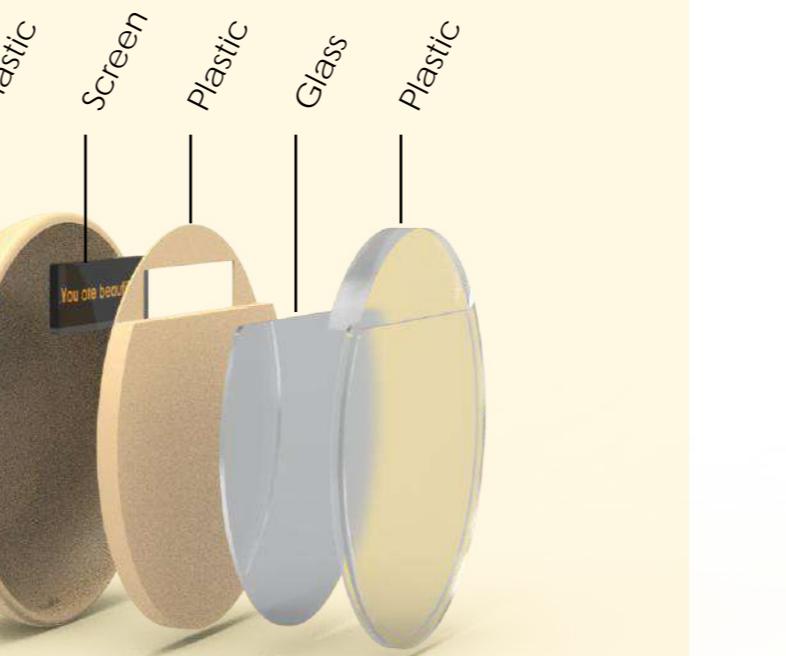
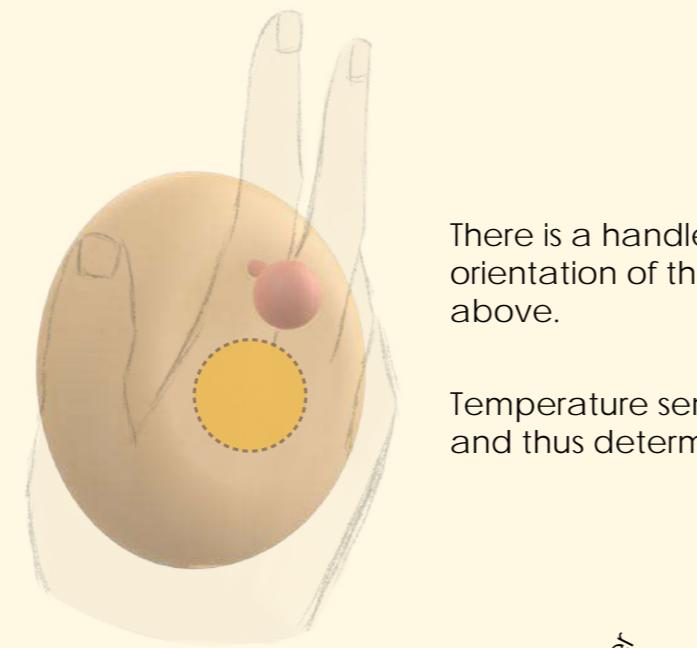
Final product

Drift

Portable mirror that trigger visual interruption when sensing appearance anxiety and evoke self-reflection through encouraging message.

Particles is stored here
when not triggered

Anxiety interruption
Positive emotion
Behaviour trigger



Scenario

Begin to develop appearance anxiety



Becoming unsure of appearance



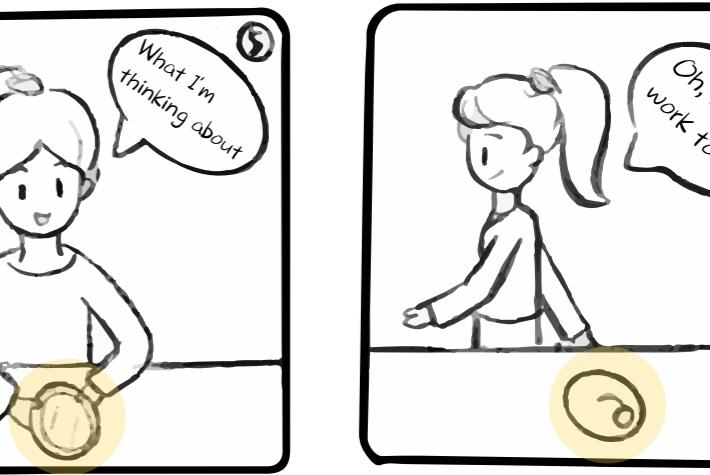
Mirror trigger effect to break
the negative thinking



Pleasant message to surprise
and encourage



Interruption of previous thoughts



Don't obsess over appearance
and self-reflect over time



Miao

An user experience designed to let Miao Village visitors learn about the culture of the Miao and help them plan their trip to enhance the tour experience.

Interface Design

User experience design

The Miao Village is full of ethnic flavours and attracts many visitors to the area, but there is less promotion of the culture when visiting, which prevents people from understanding the deep connotations behind many things.

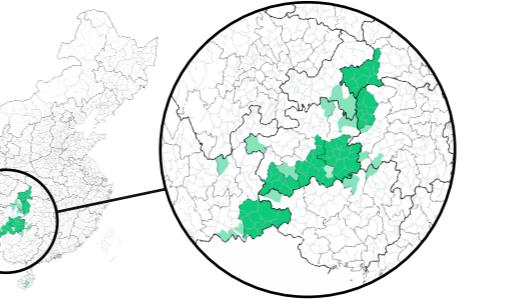
Background

Miao

The **Miao**, an *ancient ethnic group* of linguistically-related peoples living in Southern China and Southeast Asia, which are recognized by the government of China as one of the **56 official ethnic groups**.



The **Miao** live primarily in southern China's mountains, in the provinces of **Guizhou, Yunnan, Sichuan, Hubei, Hunan, Guangxi, Guangdong and Hainan**.



Miao Stockade Village of Thousand Households

It is **the largest Miao village** in China and even in the world.

With **1,432** households and **5,515** people, it was the main gathering place for **the fifth great migration** of the Miao people.

It is **the first place** to appreciate and learn about the long history and development of the Miao people in China.

Known as a place where the Miao "**primitive ecology**" culture is relatively intact.



Desktop research

Miao Culture

Legends



/Battle of Zhuolu (Huangdi Battles Chi You)

According to a Tang dynasty myth, Miao people originated from Chi You.
In early times the Huangdi and Chi You fought, Chi You was captured, the Huangdi used **maple wood** to make "shackles" to imprison Chi You.

"**Maple wood**, Chi You's abandoned its shackles, is maple wood."
—Shanhajing - Great Wilderness South Sutra

/Maple wood turning into butterfly (Mother Butterfly)

Maple wood

The Miao ancestors worshipped the **maple wood** as a totem. They consider maple wood as their kin and believe that their ancestors originated from maple wood.

Mother Butterfly

The Miao people regard the **mother butterfly** as the Ancestor of Man. After the butterfly was conceived from the center of the maple wood, it fell in love with the "water bubble" and laid twelve eggs, which hatched the dragon, tiger, buffalo, snake, centipede, thunder and **Jiang Yang** who is the ancestor of the Miao people.

Jiang Yang



Customs

The religious beliefs of the Miao are mainly **nature worship** and **ancestor worship**. The highest god of the Miao people is the ancestor.

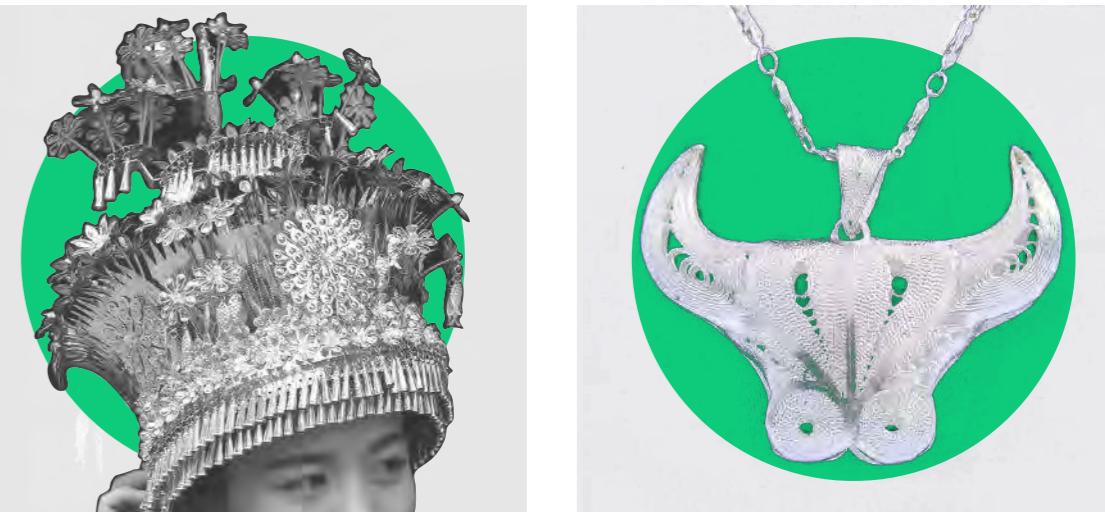
Oxen

The Miao people have a special regard for the Ox. The Miao people have long been associated with cows and have created a **unique culture of cows** in the course of their history.

Miao Embroidery

Miao embroidery is also characterised by its **vivid colours, exaggerated shapes, natural compositions and the coexistence of all things**, highlighting the artistic charm and hard work and wisdom of the Miao people.

Miao costumes not only reflect the historical changes in the culture of the people and the current situation of their lives, but also carry the important task of carrying on the national culture.



Guzang Festival

The Guzang Festival is a sacrifice to the gods Maple and Mother Butterfly. The "Guzang Festival" is the largest ritual event of the Miao people. At that time, Guzang cows are killed, dressed up in costumes, dancing reed-pipe dances and so on, and friends and relatives are invited to get together to promote relationships and family harmony.

Similar field research



Activities & Interactions

A chance to see and experience the **culture of the Miao people**. The sightseeing part focuses on the **architecture, culture and costumes** of the Miao people. Experiencing the **customs and traditions** of Miao life, such as **food, programmes and long-table feasts**.

Environments

They live between the mountains and the river, and the buildings are **wooden hammocks**, which **blend in with nature**, and the building materials are mostly **stone** in addition to **wood**. The buildings are simple and plain in form, with clear functional divisions and a strong sense of practicality.

Objects

The composition of the objects in the Miao cottage is, for the most part, distinctly ethnic in character.



Lu Sheng
(Reed wind instrument)



horn cup
(Drinking vessel)

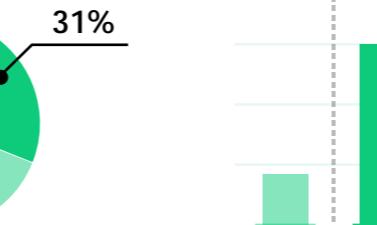


Gable light

Chinese Ethnic Culture Park - Miao

User research

The **gender ratio** of visitors is



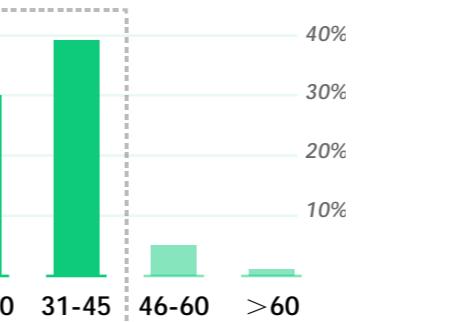
There is a **large gender gap**, which makes it relatively **less attractive** to female tourists. The potential of the **female visitor market** is huge, so it should be **developed more**.

The visitors' **travel purpose** is

- 1 Sightseeing(43%)
- 2 Leisure(33%)
- 3 Culture, Sports, Science and Education(12%)
- 4 Official activities(8%)
- 5 Other(7%)

Sightseeing is the main purpose of the visit. Its strong **ethnic minority flavour** is the main factor in its tourist attraction. Its **natural conditions** and **beautiful scenery** are important factors in attracting crowds for leisure tourism.

The **age distribution** of visitors is



Visitors are mostly **young and middle-aged**, concentrated in the **19-45 age group**, with a proportion of 83%, and the age structure of visitors is characterised by a large middle.



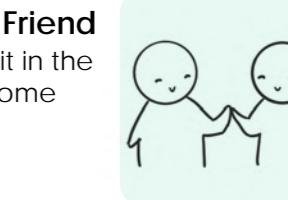
Tour group

They want to make the trip worthwhile, with a high level of enthusiasm for visiting and interest in the sites.

Friend

Most are of similar age and visit in the same general direction, with some scattered viewing.

Friend



Couple

There is a lot of communication during the tours and there will be a need for photo shoots.

Family

Parents are concerned about the safety of their children and looking after them will be a major part and may affect their own experience.



Summary

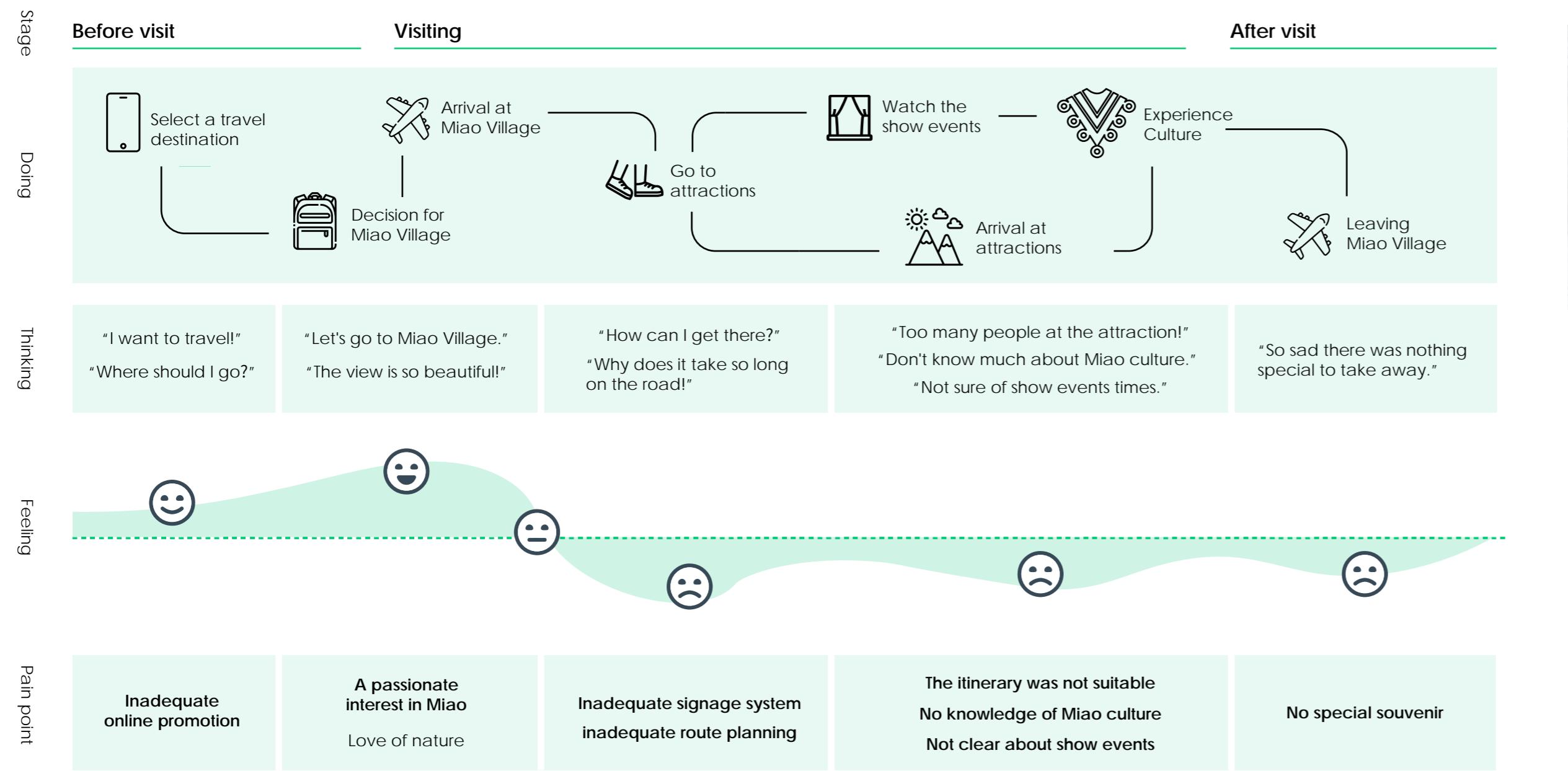
Focus on the Miao ethnic culture

Cultural heritage should be taken as the essence, and the core of Miao folklore should be tapped to enhance the cultural connotation of the scenic spot.

Focus on the touring experience

Visitors spend a lot of time on the road and have a poor touring experience; the route should be re-routed and interactive browsing devices should be installed on the road to increase interest.

Journey map



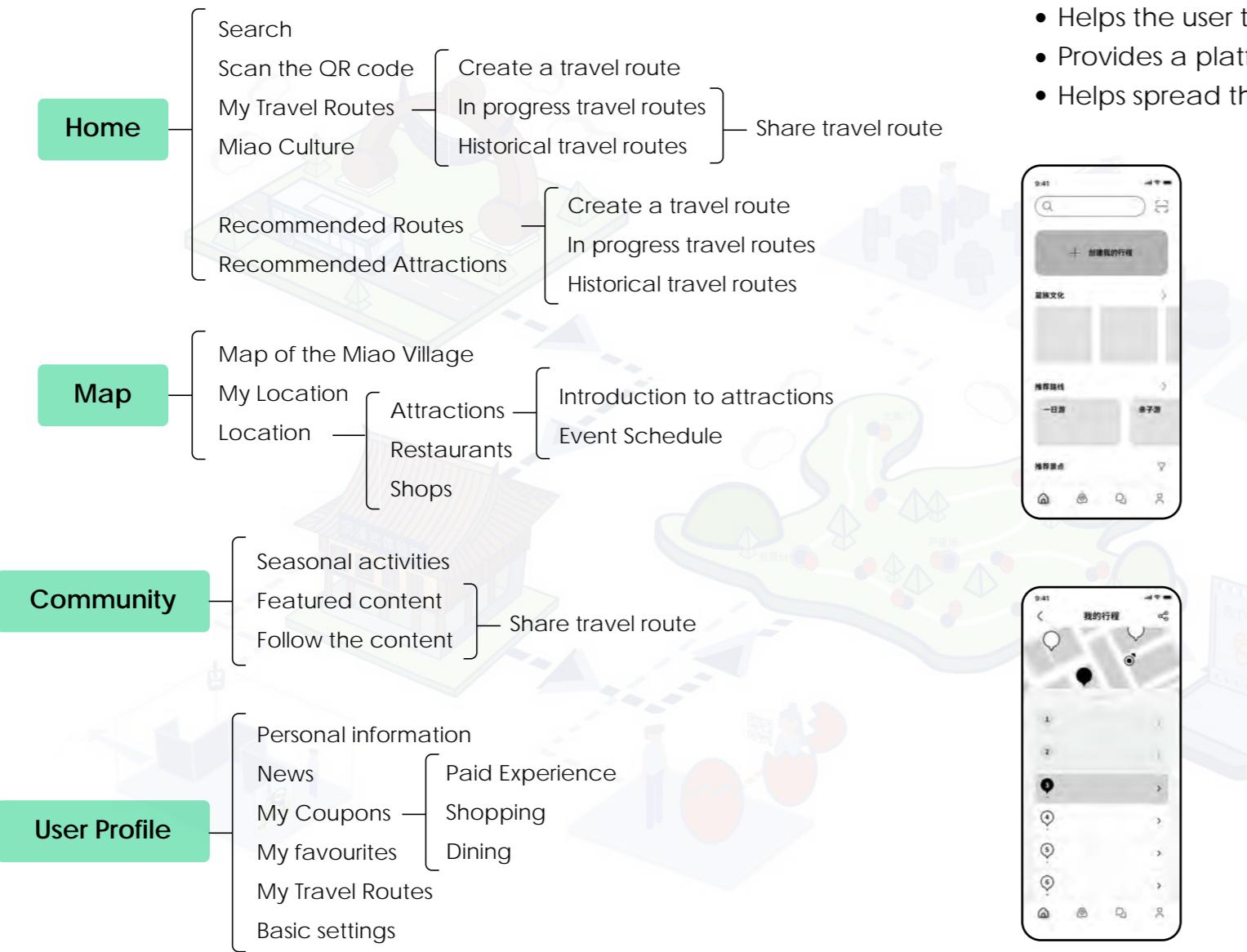
Design definition



Design opportunity

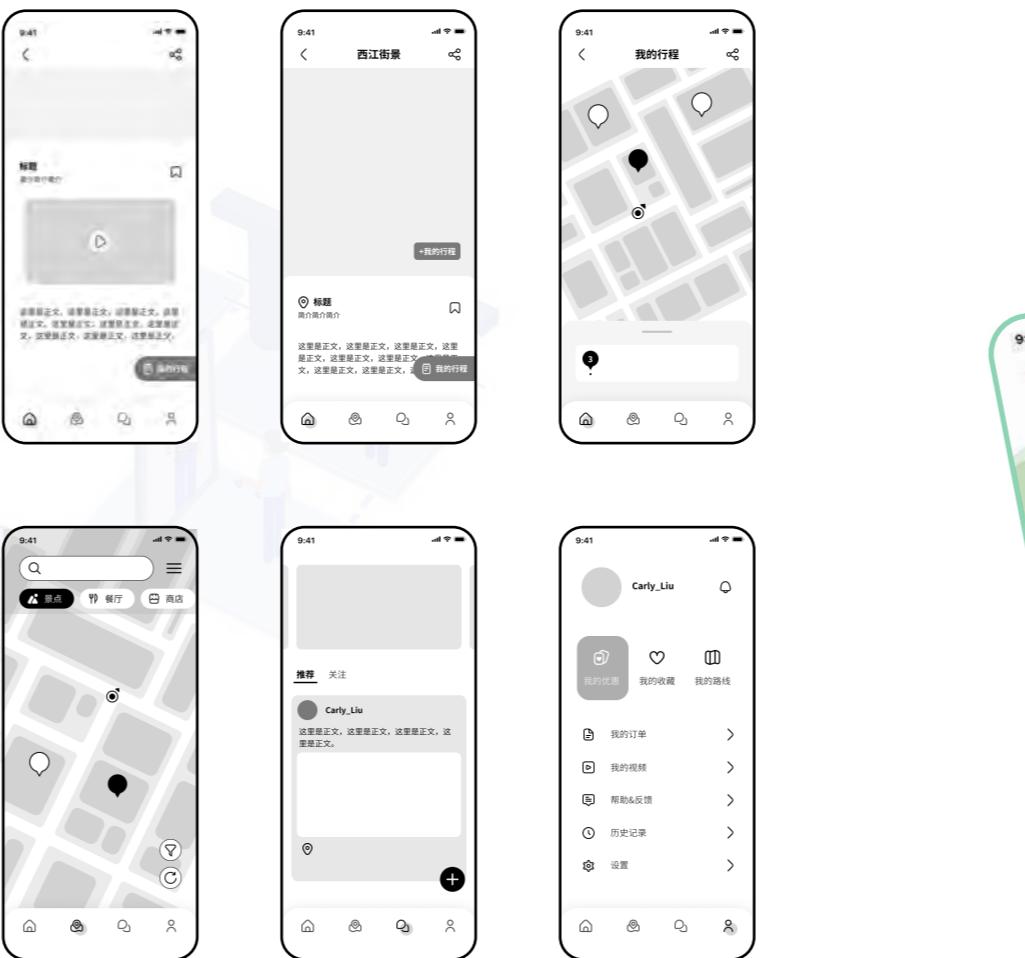


Information architecture



Wireframe

- Helps the user to plan the tour route
- Provides a platform for users to communicate and share
- Helps spread the culture of the Miao Village



User interface

